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The Relationship between the Tobacco Tax Decrease and Smoking
among Youth: Results of a Survey in South-Western Ontario.

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The Relationship Between the Tobacco Tax Decrease and Smoking Among Youth: Results of a Survey in South- Western Ontario

Working Papers Series No. 14

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The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the Ontario Tobacco Research Unit or any organization with which the authors are affiliated.

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ABSTRACT

A study was conducted to assess the impact of the February 1994 tobacco tax decrease on smoking among grade 10 youth who were participating in a longitudinal smoking prevention study. In the spring of 1994, a cohort of grade 10 youth were administered a lifestyle questionnaire (which they had completed during each of the four previous years as part of the smoking prevention trial), as well as a supplementary questionnaire to assess the impact of the tax decrease. Of the 5680 students who were eligible to complete the supplementary questionnaire, 4664 (82%) provided data. Among the respondents with a classifiable smoking status (n=4621), 1879 (41%) students identified themselves as regular (weekly) or experimental smokers, and 1110 (59%) smokers reported buying their own cigarettes. Fifty-seven percent of smokers who purchased cigarettes reported that they had not been asked their age when purchasing cigarettes during the previous month, even though the legal age to purchase cigarettes was 18 and most of the students were 15 or 16. Forty-eight percent of all smokers reported that they had increased the amount they smoked after the tax decrease, while only 16% reported decreased smoking over this period. Findings were similar for males and females. These findings suggest that many underage youth found it easy to purchase cigarettes, and that almost half of grade 10 youth who were smoking reported an increase in their smoking after the tax decrease.

INTRODUCTION

On February 9, 1994, the federal government decreased taxes on tobacco products to curb smuggling. The province of Ontario, (as well as Quebec and three Maritime provinces) also lowered provincial tobacco taxes shortly thereafter. As a result of these tax decreases, the average price of cigarettes in retail outlets dropped from approximately \$41.00/carton to \$23.00/carton in Ontario in a very short period of time.

There is concern about the impact of the price decreases on youth smoking. The prevention of smoking among adolescents is a public health priority; studies have shown that approximately 90% of adult smokers begin their smoking habit before the age of 19 (Kandel & Logan, 1994).

Research has shown that increased tobacco taxes are an effective tool in curbing consumption of cigarettes, and that it is an especially effective policy to prevent smoking among youth (Bailey & Crowe, 1994). In Health Canada's Survey on Smoking in Canada (cycle 3), teenagers (aged 15-19) were most likely to give cost as a reason for quitting smoking -- 27% of teenagers volunteered this answer, versus 18% of those aged 20-24 and 16% of those aged 26-64 (Health Canada, 1995).

The effect of cigarette tax increases on tobacco consumption can be estimated using price elasticities -- the expected percentage drop in tobacco consumption divided by the percentage of the price increase. Lewit, Coate and Grossman (1981) found price elasticity estimates of -1.4 for adolescents (i.e. a 10% increase in tobacco prices would result in a 14% decrease in demand), vs. estimates of -0.42 for all adults (U.S. Department of Health and Human Services, 1992). Warner (1986) estimated that an 8 cent decrease in federal excise tax would induce an additional one million 12-25 year old Americans to start smoking, while an 8-16 cent increase would encourage 1-2 million young persons to quit or not to start. Tax increases were found to have the biggest impact on teenagers' participation in smoking rather than reduction in quantity smoked. That is, tax increases were effective in deterring youth from starting to smoke (Lewit, Coate & Grossman, 1981). In the Ontario Alcohol and Other Drug Opinion Survey, 45% of adults felt that cigarette

taxes should be increased (Ialomiteanu & Bondy, 1995). A thorough review of tobacco prices and their effect on tobacco use is given in the "Review of Evaluations of Anti-Smoking Interventions in Countries Other than Canada", published by the Ontario Tobacco Research Unit (OTRU) (1995).

In May, 1994, three months after the tobacco tax rollback, Health Canada conducted the first of four quarterly telephone surveys with approximately 15,800 Canadians aged 15 and over. The data revealed that among youth aged 15-19, 26% of males and 29% of females in the national sample smoked. Among the 15-19 year olds in the national sample, 21% of the male smokers and 20% of the female smokers reported an increase in smoking between January, 1994, and May, 1994. Conversely, 22% of smokers in this age range reported smoking less in May than in January. Among those young smokers who said they were smoking more, 22% indicated that lower price was a factor in this (Health Canada, 1994).

The Addiction Research Foundation supplies trend data for youth in grades 7, 9, 11 and 13 every two years from 1977-1995. Smoking is defined as cigarette use within the previous 12 months. These data show a consistent downward trend in consumption from 1979-1991, and then increases in both 1993 and 1995. Among grade 11 students (age approximately 16), the rates dropped from 41.1% in 1979 to 30.4% in 1989, climbing to 34.8% in 1993 and 41.7% in 1995 (Adlaf, Ivis, Smart & Walsh, 1995). These data show an alarming increase in smoking among youth in recent years, and estimated smoking rates much higher than the Health Canada rates.

The data reported here were collected in April and May 1994, shortly after the reduction in price, and at approximately the same time as the Health Canada data. They allow an examination of possible changes in youth smoking and cigarette purchasing behaviour after the tax decrease in a cohort of grade 10 students who had been participating in a longitudinal smoking prevention study.

METHODS

Subjects

Since 1989, the Waterloo Smoking Projects (WSP) has been conducting an ongoing smoking prevention study, which involves surveying a cohort of students annually to collect information about smoking behaviour, demographic variables, and psychosocial information. At the time of the survey discussed here (April / May, 1994) the cohort was in grade 10, and averaged 15.6 years of age, with 95% being 15 or 16 years old.

The cohort consists of 4971 Grade 6 students who had parental consent to participate in the study, and was assembled in 1990. These students were originally from 100 elementary schools, in seven school boards in Southwestern Ontario, which had been randomized to one of four intervention conditions or a control condition. An additional 1434 students with consent entered the study schools and the cohort in 1991 and 1992 (Grades 7 and 8), bringing the total elementary school cohort size to 6405. The elementary school cohort was followed to high schools (including approximately 3000 students who were followed to 30 high schools that agreed to participate in a secondary school intervention study), and 5907 students provided consent to participate in data collection in grade 10.

In April/May 1994, 4,999 students from this cohort (85% of those with consent to participate) completed the annual WSP survey which included a one page supplemental questionnaire developed in consultation with OTRU (see Figure 1). The WSP survey was completed by 4093 students at school under the supervision of research staff, and by 906 students who were absent from school and completed the survey at home or responded by telephone -- the telephone interview group (n=227) did not receive the supplemental questionnaire. Of the 4,772 who received the supplemental questionnaire, 4,664 (98%) provided data. Students who completed the questionnaire at school provided a breath sample as part of a bogus pipeline procedure; collection of such samples encourages honest reporting of smoking status (Patrick, Cheadle, Thompson, Diehr, Koepsell & Kinne, 1994).

Measures

To determine smoking status, students were asked a series of questions that have been used in all WSP studies since 1979. The responses to three questions enables each student to be classified into one of five categories: 1) never smoker, 2) someone who has only smoked once, 3) quitter (student who has quit smoking, regardless of how long), 4) experimental smoker (smokes, but not as often as once per week), 5) regular smoker (smokes at least weekly).

In addition to the questions asked as part of the longitudinal study, another eight supplemental questions, developed in collaboration with OTRU, inquired about how often students purchased cigarettes, where they were purchased, the cost to purchase, whether students were asked their age, whether they had noticed changes in difficulty purchasing and/or price, and whether they were smoking more or less than in January, 1994 (i.e., prior to the tax decrease) (Figure 1).

RESULTS

Of the respondents who completed the supplemental questionnaire and whose smoking status could be classified ($n=4621$), 1879 (41%) were categorised as experimental or regular smokers (38% of males, 43% of females). Twenty-six percent of the total sample were regular (i.e., weekly) smokers; 15% were experimental smokers.

Among the 1879 students who were classified as smokers, 37% said they did not buy cigarettes themselves. Thirty-nine percent said they bought at least one pack per week, while 24% bought cigarettes less often. Regular smokers were much more likely to purchase cigarettes for themselves (87% of regular smokers vs. 18% of experimental smokers reported buying their own cigarettes).

Figure 2 indicates that students most frequently reported purchasing cigarettes in convenience stores (73%), followed by gas stations (36%) and from friends or others (21%). Grocery stores, drug stores, vending machines, restaurants and other areas were not mentioned very often by these students as points of purchase.

For questions related to the purchasing of cigarettes, attention was restricted to those 1110 smokers who reported buying their own cigarettes. At the time of the survey, the legal age to purchase cigarettes was 18, and the average age of respondents was 15.6. Over 99% of respondents were under legal age to purchase cigarettes. As indicated in Table 1, 57% of all smokers (55% of regular smokers and 71% of experimental smokers) reported that they had not been asked their age when purchasing cigarettes within the previous month. Only 11% reported being asked more than half the time. Finally, only 6% of regular smokers reported that they were almost always asked their age.

Forty-two percent of those who said they purchased cigarettes reported that it was a lot or a little easier to purchase cigarettes in May, 1994, than in January, 1994 (Table 2). Thirty-eight percent of the smokers who purchased cigarettes said they thought they were more likely to be asked their age in May than January, 48% said they thought they were as likely or less likely to be asked their age in May and 14% did not know (Table 3). In sum, many students said they were not asked their age either before or after the tax change, and there was little evidence of any change in this area.

Seventy-nine percent of smokers who purchased cigarettes said that the price was "a lot lower" in May than in January. Those who bought cigarettes once a week or more reported paying less on average (\$2.87; SD = 0.75) than those who made purchases either one to three times per month (\$3.32; SD = 1.34) or less than once a month (\$3.50; SD = 1.15).

Table 4 indicates the responses to the question "Compared to January, 1994, do you smoke more or less now than you did then?" Forty-eight percent of all smokers (50% of regular and 34% of experimental smokers) reported they had increased the amount they smoked between January and May, whereas only 16% of smokers (14% of regular and 30% of experimental smokers) reported decreased smoking over this period. There was little difference between males and females in the percentage of either regular or experimental smokers reporting smoking more in May. Fifty-one percent of male smokers and 46% of female smokers reported smoking more (Table 5).

DISCUSSION

The finding that 41% of respondents reported smoking indicates that smoking is prevalent among adolescents. This observation is consistent with estimates from other current youth smoking surveys (e.g. Adlaf et al., 1995). The overall prevalence estimate obtained in the current study of 15-16 year olds is higher than that from the Health Canada survey of 15-19 year old youth (27%).

Certain methodological differences between the studies may have contributed to the different prevalence estimates. Specifically, (a) in this study, the collection of breath samples in conjunction with the survey was intended to encourage honest reporting. Collection of breath samples was not possible in the telephone survey conducted by Health Canada: (b) The ages of participants differed between the two studies. The current study surveyed students in Grade 10, whose average age was 16; respondents in the Health Canada survey ranged in age from 15-19. The adolescent years are a time when youth are experimenting with tobacco and developing their smoking habits, therefore smoking rates differ substantially between single years of age: (c) The current study was a school-based study, while the Health Canada survey included older subjects who were no longer in school. However, inclusion of older subjects would be expected to lead to higher rates in the Health Canada survey: (d) Finally, the questions used and the definitions of smoking were different in the two studies. The current study considered regular (smokes at least once a week) and experimental (smokes, but not as often as once a week) smokers, while the Health Canada study defined daily and non-daily smokers. However, there is no reason to suspect that these definitions would lead to lower estimates for the Health Canada survey.

Table 6 compares the reported changes in smoking before and after the tax cut obtained in this study, with those reported in the Health Canada survey. The WSP data indicate that 51% of Grade 10 male smokers and 46% of Grade 10 female smokers (both regular and experimental) reported that they smoked more in May than in January; conversely, 14% of males and 17% of females reported smoking less in May. These estimates suggest a greater net shift toward increased smoking than the Health Canada data. Again, methodological differences could

account for the differences in estimates for changes in smoking rates.

It should also be noted that it is not possible to separate the impact of the change in tax from a possible general increase in smoking prevalence and/or amount smoked in these students. Responses from students in other jurisdictions where prices did not change were not available. However, preliminary data from the cohort one year later (April-May, 1995) indicate similar reported changes in consumption relative to September 1994, just before the implementation of the Ontario Tobacco Strategy initiatives.

The current study also found that underage youth found it easy to purchase cigarettes in Ontario during April and May, 1994. Restricting youth access to tobacco is a key component in strategies to reduce tobacco consumption among youth. Investigation of possible changes in self-reported access after the implementation of the Ontario Tobacco Strategy initiatives is currently underway.

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Figure 1: Supplementary Questionnaire

These questions are about **BUYING CIGARETTES**.

1) How often do you buy your own cigarettes?

- ① once a week or more
- ② 1 to 3 times a month
- ③ Less than once a month
- ④ I don't smoke cigarettes
- ⑤ I don't buy cigarettes

2) In the **PAST MONTH**, where did you go when you bought cigarettes for yourself?
[CHECK ALL THAT APPLY]

- ① A convenience store, such as Seven-Eleven
- ② Drug store
- ③ Gas station
- ④ Grocery store / supermarket
- ⑤ Restaurant / diner / cafeteria
- ⑥ Vending machine
- ⑦ A friend or another person
- ⑧ Another place (where? _____)
- ⑨ I don't smoke cigarettes
- ⑩ I don't buy cigarettes

3) In the **PAST MONTH**, when you tried to buy cigarettes, how many times were you asked your age?

- ① Never
- ② Less than half of the time
- ③ About half of the time
- ④ More than half of the time
- ⑤ Always or almost always
- ⑥ I don't smoke cigarettes
- ⑦ I don't buy cigarettes

4) In the **PAST MONTH**, about how much did it cost you on average to buy a pack of 20 cigarettes?

[ENTER PRICE:] \$ _____ . _____

- ⑨ I don't smoke cigarettes
- ⑩ I don't buy cigarettes

5) Compared to **JANUARY 1994** is it easier or harder for you to buy cigarettes **NOW** than it was then?

- ① A lot easier now
- ② A little easier now
- ③ About the same now
- ④ A little harder now
- ⑤ A lot harder now
- ⑥ Don't know
- ⑦ I don't smoke cigarettes
- ⑧ I don't (or didn't) buy cigarettes

6) Compared to **JANUARY 1994**, when you buy cigarettes, are you more likely or less likely to get asked your age **NOW** than you were then?

- ① A lot more likely to get asked now
- ② A little more likely to get asked now
- ③ Neither more or less likely now
- ④ A little less likely to get asked now
- ⑤ A lot less likely to get asked now
- ⑥ Don't know
- ⑦ I don't smoke cigarettes
- ⑧ I don't (or didn't) buy cigarettes

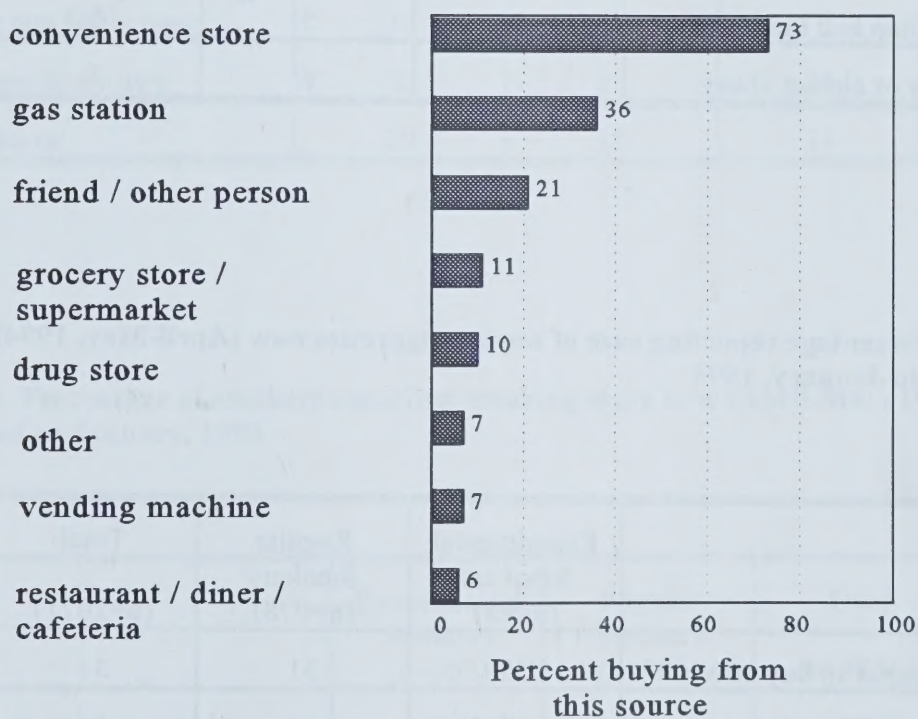
7) Compared to **JANUARY 1994**, is the price you pay for a pack of 20 cigarettes higher or lower **NOW** than it was then?

- ① A lot higher now
- ② A little higher now
- ③ About the same now
- ④ A little lower now
- ⑤ A lot lower now
- ⑥ Don't know
- ⑦ I don't smoke cigarettes
- ⑧ I don't (or didn't) buy cigarettes

8) Compared to **JANUARY 1994**, do you smoke more or less **NOW** than you did then?

- ① A lot more now
- ② A little more now
- ③ About the same now
- ④ A little less now
- ⑤ A lot less now
- ⑥ Don't know
- ⑦ I don't smoke cigarettes

Figure 2: Where adolescent smokers reported buying cigarettes



* students could select more than one location

Table 1: Percentage of adolescents reported being asked their age when buying cigarettes

	Experimental Smokers (n=97)	Regular Smokers (n=992)	Total (n=1089)
Never	71	55	57
Less than half the time	12	25	24
About half the time	5	9	8
More than half the time	4	5	5
Always or almost always	7	6	7

Table 2: Percentage reporting ease of buying cigarettes now (April-May, 1994) compared to January, 1994

	Experimental Smokers (n=93)	Regular Smokers (n=978)	Total (n=1071)
A lot easier to buy now	25	31	31
A little easier to buy now	13	11	11
About the same now	30	32	31
A little harder to buy now	14	13	13
A lot harder to buy now	5	8	8
Don't know	13	5	6

Table 3: Percentage of smokers reporting they were more likely to get asked their age now (April-May, 1994) compared to January, 1994

	Experimental Smokers (n=90)	Regular Smokers (n=973)	Total (n=1063)
A lot more likely now	17	20	19
A little more likely now	16	18	18
About the same now	21	27	26
A little less likely now	10	7	7
A lot less likely now	8	15	15
Don't know	29	13	14

Table 4: Percentage of smokers reporting smoking more now (April-May, 1994) compared to January, 1994

	Experimental Smokers (n=102)	Regular Smokers (n=984)	Total (n=1086)
A lot more now	15	22	21
A little more now	20	28	27
About the same now	28	33	33
A little less now	12	8	9
A lot less now	19	6	7
Don't know	7	3	3

Table 5: Percentage of smokers reporting smoking more now (April-May, 1994) compared to January, 1994 by gender

	Experimental Smokers		Regular Smokers		All Smokers	
	Male (n=49)	Female (n=53)	Male (n=454)	Female (n=530)	Male (n=503)	Female (n=583)
A lot more now	16	13	24	20	23	19
A little more now	22	17	28	28	27	27
About the same now	29	28	32	34	32	33
A little less now	8	15	7	9	8	10
A lot less now	18	19	5	6	6	8
Don't know	6	8	3	3	4	3

Table 6: Comparison of the percentage of smokers reporting smoking more after the tax decrease

	Health Canada Survey - daily and non-daily smokers (n=2939)		WSP Survey - all smokers (n=1086)	
	Male	Female	Male	Female
A little or a lot more now	24	19	51	46
About the same now	48	45	32	33
A little or a lot less now	28	36	14	17
Don't know	N/A	N/A	4	3

The Ontario Tobacco Research Unit (OTRU) was established by the Ministry of Health in July 1993. Its mission is to undertake a program of research, development and dissemination of knowledge about effective tobacco control programs and policies. It will assure that existing knowledge is critically evaluated, summarized appropriately, and made available in the most useful form. In collaboration with individuals, groups, and agencies interested in and responsible for developing tobacco reduction programs and policies, the OTRU will lead in the identification of priority areas for knowledge development. The OTRU will produce a program of research based on these identified priorities. Finally, the OTRU will ensure that knowledge is disseminated widely to programmers and policy makers, to the research community and, where appropriate, to the general public.

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